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MEMORANDUM FOR: Chief, [redacted] 25X1A

FROM : Assistant Director for Research and Reports

SUBJECT : Soil Conditions in the Sinkiang Area

REFERENCE : [redacted] 25X1A

1. In response to your memorandum of 5 March 1954, a check of information sources has been made in the Economic Area of ORR, but only information of a very general nature was found, as follows:

SINKIANG

a. (Unclassified) International Agro-Climatological Series Study No. 7 1947 M. Y. Mattoneen
Pg. 18 - Jan. mean temp. (°F) 4 - 19 degrees
Jul. mean temp. (°F) 72 - 93 degrees
Annual mean temp. (°F) 40 - 58 degrees

Annual precipitation in inches - 2-11
Indications are that the growing period in days is about 110 to 120.

Climatic Analogues in North America
Meteorological stations in Sinkiang are too meager to permit highly accurate analogues - Indications or pointers for the area concerned would be:
Urumchi - North East Wyoming - Elevation roughly 5000 feet
Turfan - Northwest North Dakota - Elevation roughly 0 to 2000 feet

b. (Unclassified) China's Geographic Foundations - Cressey Pg. 252 - Indicates the last killing frost is in May and the first killing frost is in September

c. (Confidential) General - Documents Branch - Summary No. 3 - 30 June 1947 CIA - Pg. 4
The soil of the area is loess. Probably to the depth of five feet in many areas.
Turfan - An internal drainage basin: outer zone a sloping belt of bare gravel. Next zone is vegetation (probably on a loess soil). Third zone is usually of sand and lacustrine deposits. Center is usually a salt lake. (It is probable that the PH of the soil in these areas is high - that is, the soils are likely to be alkaline.)

2. A further check on this subject is being requested of the ORR Geographic Division. Any further information that can be found will be forwarded to you as soon as possible. However, it is doubtful whether more specific data on this area is available.

OTTO E. GUTHE
Assistant Director
Research and Reports

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SINKIANG

INTERNATIONAL AERO-CLIMATOLOGICAL SERIES

STUDY No. 7 1947 — [redacted] 25X1A

Pg 19 - Jan. mean Temp (°F) 4-19 degrees ANNUAL PRECIPITATION IN INCHES
July. " " (°F) 72-98 " 2-11
ANNUAL " (°F) 40-58.
INDICATIONS ARE THAT THE GROWING PERIOD INDEX IS ABOUT 110 TO [redacted]

CLIMATIC ANALOGUES IN NORTH AMERICA

METEOROLOGICAL STATIONS IN SINKIANG ARE TOO NEARBY TO PERMIT HIGHLY ACCURATE ANALOGUES - INDICATIONS OR POINTERS FOR THE AREA CONCERNED WOULD BE:

URUMCHI — NORTH EAST WYOMING — ELEVATION ROUGHLY 5000' FEET
TURFAN — NORTH WEST NORTH DAKOTA - ELEVATION ROUGHLY 0 TO 2000 FEET

2) CHINA'S GEOGRAPHIC FOUNDATIONS — [redacted] 25X1A

Pg-252 - INDICATES THE LAST KILLING FROST IS IN MAY AND THE FIRST KILLING FROST IS IN SEPTEMBER.

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3) GENERAL - DOCUMENTS BRANCH - Summary No 3 - 30 JUN 1947
CIA - Pg - 4-

THE SOIL OF THE AREA IS LOESS, PROBABLY TO THE DEPTH OF FIVE FEET IN MANY AREAS.

TURFAN - AN INTERNAL DRAINAGE BASIN: OUTER ZONE A SLOPING BELT OF BARE GRAVEL. NEXT ZONE IS VEGETATION (PROBABLY ON A LOESS SOIL) THIRD ZONE IS USUALLY OF SAND AND LACUSTRINE DEPOSITS. CENTER IS USUALLY A SALT LAKE. (IT IS PROBABLE THAT THE PH OF THE SOIL IN THESE AREAS IS HIGH - THAT IS THE SOILS ARE LIKELY TO BE ALKALINE)

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[redacted] ? Any info ?
D/GG.

25X1A

[redacted] M/AG.
X-9819 Put together above information.

61.1239

SECRET

5 March 1954

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MEMORANDUM FOR: Assistant Director for Research and Reports

ATTENTION : Chief, ST/PC

SUBJECT : Soil Conditions in Sinkiang Area

25X1A

REFERENCE : [redacted]

25X1A

1. As discussed with [redacted] of your office, it is requested that ORR furnish soil information as follows, for the Sinkiang area in the vicinity of Urumchi and Turfan:

a. Alkalinity or acidity of the soil.

b. Type of soil to a depth of five feet.

c. Mean moisture content of the soil by months.

d. Frost line by months.

2. We should appreciate receiving this information by 2 April 1954. Any questions pertaining to this request should be referred to [redacted] on extension 8641.

25X1A

[redacted] 25X1A

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Rec'd 07/20 3/30/54

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~~SECRET~~

CENTRAL INTELLIGENCE AGENCY
Geography Division, ORR
Project Proposal Memorandum

To: Chief, Geography Division — Project No. 61.1239

From: Chief, Far East Branch — **CONFIDENTIAL** — Date: 30 March 54

1. Subject of Proposed Project: Soil Conditions in Sinkiang Area

2. Statement of Problem: (Outline to be attached)
Soil information as follows for the Sinkiang area in the vicinity of Urumchi and Turfan:
a. Alkalinity of acidity of the soil; b. Type of soil to a depth of five feet; c. Mean moisture content of the soil by months; d. Frost line by months.

3. Requester: [redacted] dated 5 March 1954 (received in D/GG 30 March 54). 25X1A

4. Responsible Analyst: [redacted] Far East Branch 25X1A

5. Kind and Extent of Cooperation Desired from (a) other divisions of this Geographic Area (include maps), (b) other parts of CIA, (c) outside CIA:
Possible examination of files held by ESID and MGB.

6. Estimated Man Hours to Complete: 20 hours

7. Probable Completion Date: 2 April 54

8. Probable Form of Final Publication: G/I Memorandum (G/I-15)

9. Special Recommendations Regarding Distribution of Finished Reports:

10. Comments:
Distribution to requester plus necessary file copies.

[redacted] 25X1A
Chief, GG/F

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Approved:
Chief, D/GG
30 March 54
Date

DOCUMENT NO. 3
NO CHANGE IN CLASS. ☐
☐ DECLASSIFIED
CLASS. CHANGED TO: TS S 81989
NEXT REVIEW DATE:
AUTH: HR 70-2
DATE 8-21-79 REVIEWER: 372044

~~SECRET~~

DISTRIBUTION LIST

Title of Report: SOIL CONDITIONS OF URUMCHI AND TURFAN, SINKIANG PROVINCE

Report Series No. G/I-15 Project Number 61.1239 Classification C

Analyst: [redacted] 25X1A Maps: None Pictures: None

Requester: [redacted] dated 3/5/54* 25X1A

No.	To	Date	No.	To	Date
1.	[redacted]		21.	25X1A	
2.	2056 L Bldg. ditto	4/2/54	22.		
3.	ditto		23.		
4.	ditto		24.		
5.	ditto		25.		
6.	ditto		26.		
7.	ditto		27.		
8.	ditto		28.		
9.	ditto		29.		
10.	ditto		30.		
11.	Ch/G		31.		
12.	~~AD~~/RR Rec'd	4/7/54	32.		
13.	~~AD~~/RR Rec'd	"	33.		
14.	DD/I		34.		
15.	St/PC		35.		
16.	St/PC		36.		
17.	St/PB		37.		
18.	GG/Far East		38.		
19.	Circulate in D/GG		39.		
20.	File in GG/F D/GG files.		40.		

DOCUMENT NO. 4
NO CHANGE IN CLASS.
DECLASSIFIED
CLASS. CHANGED TO: TS S C
NEXT REVIEW DATE: 1984
AUTH: HR 70-2
DATE: 8-21-79 REVIEWER: 372044

Comments on Distribution:

* This request also worked on by M/AG/RR

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COPY NO. 20

SOIL CONDITIONS AT URUMCHI AND TURFAN, SINKIANG PROVINCE

25X1A [redacted]

G/I-15
April 1954

CENTRAL INTELLIGENCE AGENCY

OFFICE OF RESEARCH AND REPORTS

CONFIDENTIAL

W-A-R-N-I-N-G

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Approved For Release 2000/05/11 : CIA-RDP79-01002A000200040001-5

CONTENTS

SOIL CONDITIONS AT URUMCHI AND TURFAN, SINKIANG PROVINCE

Specific data regarding exact soil conditions at Urumchi and Turfan are not available. General soils information is available, however, for this area of Sinkiang, and the information supplied has been derived from these general descriptions of major soil areas and conditions. Reliability of the information ranges from poor to good. Since both cities are located in transitional zones between major soil areas and land-form types, soil conditions in the vicinity of the two cities vary considerably.

1. Alkalinity or Acidity of the Soil

Soils in both areas probably are very mildly alkaline. Soil tested in the Turfan Depression gave a reaction of 7.3 in pH value which would be classified as a very mildly alkaline soil. Soils with a higher alkaline reaction are found in lowlands where drainage is poor, and, as in other arid regions, irrgated land often becomes highly alkaline if proper drainage is not maintained.

2. Type of Soil

Three types of soil occur in the vicinity of Turfan, as follows:

a. The dominant soil of the Turfan Depression proper, which consists of salt flats and marshes, is a fine-grained soil consisting of an upper layer of silt 2 to 10 feet in depth underlain with plastic clays which locally may be stratified with coarser soils. A salt crust several inches thick is found on the surface.

b. On the margins of the flats and marshes occur fine-grained soils that have a surface layer of plastic clay which ranges in thickness

from 12 to 30 inches; columnar plastic clay is found below at depths from 3 to 5 feet. Silty sand, silt, and clay of low plasticity, stratified in various sequences and thicknesses, occur below the plastic clay.

c. The fine-grained soils of the flats and their margins grade into coarse-grained soils associated with the gently sloping terraces and alluvial fans found at the base of the mountains north of Turfan. This soil has a surface layer of gravel and sandy gravel of 2 to 4 inches in thickness which is underlain with well-graded sand and gravelly sand to depths ranging from 2 to 25 feet.

In the vicinity of Urumchi two types of soil are found. The coarse-grained deep gravel and sandy soils -- the same as type (c) above -- occur on the terraces and plains at and near Urumchi. Soils of the foothills near Urumchi are mixtures of fine and coarse-grained soils differentiated from type (c) by admixtures of silt, a thinner layer of soil (only 2 to 5 feet in depth), and by quantities of stones, stone fragments, and boulders in the rougher and steeper areas.

3. Moisture Content and Frost Line

The moisture content and amount of frost in the ground varies to some extent between Turfan and Urumchi. This is due to differences in elevation (Turfan at -49 feet; Urumchi approximately 3,000 feet), annual precipitation (Turfan less than 2 inches; Urumchi about 10 inches), temperature conditions, and the different types of soil found.

On the sandy terraces and plains that border the Turfan Depression, the ground remains dry throughout the year since there is insufficient moisture for the ground to freeze hard despite sub-freezing temperatures during much of the winter. In oases, however, such as at Turfan, the

ground is frozen during the winter months at depths to 1 or possibly 2 feet, and during the spring thaw there are 3 to 5 days when the ground is wet and sticky up to depths of several feet.

Quite different conditions prevail in the salt flats and marshes of the Turfan Depression. Here the ground is wet from the spring thaw to late summer or early autumn; it usually dries until frozen hard in winter. Some of the larger marshes, however, remain wet until frozen solid. There are about 45 consecutive days in winter when the ground is frozen hard at depths from 3 to 15 inches with a total of 60 days for the year. The number of days when the ground is wet totals 215; days when the ground is completely dry averages about 90 days.

Somewhat different conditions are found in the vicinity of Urumchi. During the warm months, the sandy and gravelly plains and terraces are completely dry as described for the Turfan area; in the cold season, however, the ground is frozen for about 5 continuous months with a total of some 170 days in all. Where the soil is largely composed of coarse-grained particles, the frozen layer reaches 7 to 10 feet in depth. In soils consisting of fine-grained materials, the frozen layer is somewhat less. Below the frozen layer, the ground is dry. The ground is dry an estimated 185 days a year, frozen about 170 days, and wet about 10 days. The periods of wet ground are short due to limited precipitation and the rapid percolation of water into these coarse-grained soils. Rather similar conditions prevail in the foothills near Urumchi except that the number of days of wet ground increases to about 30. Except for ground adjacent to deep snow drifts, the ground is seldom wet for periods longer than 2 to 4 days. There are at least 5 consecutive months in

which the ground is frozen with a total number of days per year about 205. The total number of dry days averages about 130.

Conditions vary at both Turfan and Urumchi in the fields of the oases where the ground is wet for 2 or 3 day periods after irrigation during spring and summer. In lowlands along major streams near the point where the streams emerge from the mountains, the ground is flooded from one day to several weeks during spring and early summer.

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